SEQUENCE LISTING

<110> Wilson, James M.
       Xiao, Weidong

<120> Adeno-Associated Virus Serotype I Nucleic Acid Sequences,
       Vectors and Host Cells Containing Same

<130> GNVPN.031USA

<140> US 09/807,802
<141> 2001-04-17

<150> US 60/107,114
<151> 1998-11-05

<150> PCT/US99/25694
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Val Ile Lys Val Pro Ser Asp Leu Asp Glu His Leu Pro Gly Ile Ser
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gcc gag aag ctg cag cgc gac ttc ctg gtc caa tgg cgc cgc gtg agt        547
Ala Glu Lys Leu Gln Arg Asp Phe Leu Val Gln Trp Arg Arg Val Ser
            60                  65                  70

aag gcc ccg gag gcc ctc ttc ttt gtt cag ttc gag aag ggc gag tcc        595
Lys Ala Pro Glu Ala Leu Phe Phe Val Gln Phe Glu Lys Gly Glu Ser
        75                  80                  85

tac ttc cac ctc cat att ctg gtg gag acc acg ggg gtc aaa tcc atg        643
Tyr Phe His Leu His Ile Leu Val Glu Thr Thr Gly Val Lys Ser Met
        90                  95                  100

gtg ctg ggc cgc ttc ctg agt cag att agg gac aag ctg gtg cag acc        691
Val Leu Gly Arg Phe Leu Ser Gln Ile Arg Asp Lys Leu Val Gln Thr
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atc tac cgc ggg atc gag ccg acc ctg ccc aac tgg ttc gcg gtg acc        739
Ile Tyr Arg Gly Ile Glu Pro Thr Leu Pro Asn Trp Phe Ala Val Thr
120                 125                 130                 135

aag acg cgt aat ggc gcc gga ggg ggg aac aag gtg gtg gac gag tgc        787
Lys Thr Arg Asn Gly Ala Gly Gly Gly Asn Lys Val Val Asp Glu Cys
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tac atc ccc aac tac ctc ctg ccc aag act cag ccc gag ctg cag tgg        835
Tyr Ile Pro Asn Tyr Leu Leu Pro Lys Thr Gln Pro Glu Leu Gln Trp
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gcg tgg act aac atg gag gag tat ata agc gcc tgt ttg aac ctg gcc        883
Ala Trp Thr Asn Met Glu Glu Tyr Ile Ser Ala Cys Leu Asn Leu Ala
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gag cgc aaa cgg ctc gtg gcg cag cac ctg acc cac gtc agc cag acc        931
Glu Arg Lys Arg Leu Val Ala Gln His Leu Thr His Val Ser Gln Thr
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cag gag cag aac aag gag aat ctg aac ccc aat tct gac gcg cct gtc        979
Gln Glu Gln Asn Lys Glu Asn Leu Asn Pro Asn Ser Asp Ala Pro Val
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atc cgg tca aaa acc tcc gcg cgc tac atg gag ctg gtc ggg tgg ctg       1027
Ile Arg Ser Lys Thr Ser Ala Arg Tyr Met Glu Leu Val Gly Trp Leu
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gtg gac cgg ggc atc acc tcc gag aag cag tgg atc cag gag gac cag       1075
Val Asp Arg Gly Ile Thr Ser Glu Lys Gln Trp Ile Gln Glu Asp Gln
            235                 240                 245

gcc tcg tac atc tcc ttc aac gcc gct tcc aac tcg cgg tcc cag atc       1123
Ala Ser Tyr Ile Ser Phe Asn Ala Ala Ser Asn Ser Arg Ser Gln Ile
        250                 255                 260

aag gcc gct ctg gac aat gcc ggc aag atc atg gcg ctg acc aaa tcc       1171
Lys Ala Ala Leu Asp Asn Ala Gly Lys Ile Met Ala Leu Thr Lys Ser
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gcg ccc gac tac ctg gta ggc ccc gct ccg ccc gcg gac att aaa acc      1219
Ala Pro Asp Tyr Leu Val Gly Pro Ala Pro Pro Ala Asp Ile Lys Thr
280             285             290             295

aac cgc atc tac cgc atc ctg gag ctg aac ggc tac gaa cct gcc tac      1267
Asn Arg Ile Tyr Arg Ile Leu Glu Leu Asn Gly Tyr Glu Pro Ala Tyr
            300             305             310

gcc ggc tcc gtc ttt ctc ggc tgg gcc cag aaa agg ttc ggg aag cgc      1315
Ala Gly Ser Val Phe Leu Gly Trp Ala Gln Lys Arg Phe Gly Lys Arg
            315             320             325

aac acc atc tgg ctg ttt ggg ccg gcc acc acg ggc aag acc aac atc      1363
Asn Thr Ile Trp Leu Phe Gly Pro Ala Thr Thr Gly Lys Thr Asn Ile
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gcg gaa gcc atc gcc cac gcc gtg ccc ttc tac ggc tgc gtc aac tgg      1411
Ala Glu Ala Ile Ala His Ala Val Pro Phe Tyr Gly Cys Val Asn Trp
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acc aat gag aac ttt ccc ttc aat gat tgc gtc gac aag atg gtg atc      1459
Thr Asn Glu Asn Phe Pro Phe Asn Asp Cys Val Asp Lys Met Val Ile
360             365             370             375

tgg tgg gag gag ggc aag atg acg gcc aag gtc gtg gag tcc gcc aag      1507
Trp Trp Glu Glu Gly Lys Met Thr Ala Lys Val Val Glu Ser Ala Lys
            380             385             390

gcc att ctc ggc ggc agc aag gtg cgc gtg gac caa aag tgc aag tcg      1555
Ala Ile Leu Gly Gly Ser Lys Val Arg Val Asp Gln Lys Cys Lys Ser
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tcc gcc cag atc gac ccc acc ccc gtg atc gtc acc tcc aac acc aac      1603
Ser Ala Gln Ile Asp Pro Thr Pro Val Ile Val Thr Ser Asn Thr Asn
            410             415             420

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Met Cys Ala Val Ile Asp Gly Asn Ser Thr Thr Phe Glu His Gln Gln
            425             430             435

ccg ttg cag gac cgg atg ttc aaa ttt gaa ctc acc cgc cgt ctg gag      1699
Pro Leu Gln Asp Arg Met Phe Lys Phe Glu Leu Thr Arg Arg Leu Glu
440             445             450             455

cat gac ttt ggc aag gtg aca aag cag gaa gtc aaa gag ttc ttc cgc      1747
His Asp Phe Gly Lys Val Thr Lys Gln Glu Val Lys Glu Phe Phe Arg
            460             465             470

tgg gcg cag gat cac gtg acc gag gtg gcg cat gag ttc tac gtc aga      1795
Trp Ala Gln Asp His Val Thr Glu Val Ala His Glu Phe Tyr Val Arg
            475             480             485

aag ggt gga gcc aac aaa aga ccc gcc ccc gat gac gcg gat aaa agc      1843
Lys Gly Gly Ala Asn Lys Arg Pro Ala Pro Asp Asp Ala Asp Lys Ser
            490             495             500

gag ccc aag cgg gcc tgc ccc tca gtc gcg gat cca tcg acg tca gac      1891
Glu Pro Lys Arg Ala Cys Pro Ser Val Ala Asp Pro Ser Thr Ser Asp
505             510             515
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tct cgt cac gcg ggc atg ctt cag atg ctg ttt ccc tgc aag aca tgc      1987
Ser Arg His Ala Gly Met Leu Gln Met Leu Phe Pro Cys Lys Thr Cys
                540                 545                 550

gag aga atg aat cag aat ttc aac att tgc ttc acg cac ggg acg aga      2035
Glu Arg Met Asn Gln Asn Phe Asn Ile Cys Phe Thr His Gly Thr Arg
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gac tgt tca gag tgc ttc ccc ggc gtg tca gaa tct caa ccg gtc gtc      2083
Asp Cys Ser Glu Cys Phe Pro Gly Val Ser Glu Ser Gln Pro Val Val
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aga aag agg acg tat cgg aaa ctc tgt gcc att cat cat ctg ctg ggg      2131
Arg Lys Arg Thr Tyr Arg Lys Leu Cys Ala Ile His His Leu Leu Gly
585                 590                 595

cgg gct ccc gag att gct tgc tcg gcc tgc gat ctg gtc aac gtg gac      2179
Arg Ala Pro Glu Ile Ala Cys Ser Ala Cys Asp Leu Val Asn Val Asp
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ctg gat gac tgt gtt tct gag caa taa atgacttaaa ccaggt atg gct gcc   2231
Leu Asp Asp Cys Val Ser Glu Gln                         Met Ala Ala
                620                                             625

gat ggt tat ctt cca gat tgg ctc gag gac aac ctc tct gag ggc att      2279
Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser Glu Gly Ile
                630                 635                 640

cgc gag tgg tgg gac ttg aaa cct gga gcc ccg aag ccc aaa gcc aac      2327
Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro Lys Ala Asn
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cag caa aag cag gac gac ggc cgg ggt ctg gtg ctt cct ggc tac aag      2375
Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro Gly Tyr Lys
660                 665                 670

tac ctc gga ccc ttc aac gga ctc gac aag ggg gag ccc gtc aac gcg      2423
Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro Val Asn Ala
675       ..            680                 685                 690

gcg gac gca gcg gcc ctc gag cac gac aag gcc tac gac cag cag ctc      2471
Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp Gln Gln Leu
                695                 700                 705

aaa gcg ggt gac aat ccg tac ctg cgg tat aac cac gcc gac gcc gag      2519
Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala Asp Ala Glu
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ttt cag gag cgt ctg caa gaa gat acg tct ttt ggg ggc aac ctc ggg      2567
Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly Asn Leu Gly
                725                 730                 735

cga gca gtc ttc cag gcc aag aag cgg gtt ctc gaa cct ctc ggt ctg      2615
Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Leu Gly Leu
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Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg Pro Val Glu
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cag tcg cca caa gag cca gac tcc tcc tcg ggc atc ggc aag aca ggc    2711
Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly Lys Thr Gly
                775                 780                 785

cag cag ccc gct aaa aag aga ctc aat ttt ggt cag act ggc gac tca    2759
Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser
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gag tca gtc ccc gat cca caa cct ctc gga gaa cct cca gca acc ccc    2807
Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro Ala Thr Pro
                805                 810                 815

gct gct gtg gga cct act aca atg gct tca ggc ggt ggc gca cca atg    2855
Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly Ala Pro Met
                820                 825                 830

gca gac aat aac gaa ggc gcc gac gga gtg ggt aat gcc tca gga aat    2903
Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asn
835                 840                 845                 850

tgg cat tgc gat tcc aca tgg ctg ggc gac aga gtc atc acc acc agc    2951
Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser
                855                 860                 865

acc cgc acc tgg gcc ttg ccc acc tac aat aac cac ctc tac aag caa    2999
Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln
                870                 875                 880

atc tcc agt gct tca acg ggg gcc agc aac gac aac cac tac ttc ggc    3047
Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His Tyr Phe Gly
                885                 890                 895

tac agc acc ccc tgg ggg tat ttt gat ttc aac aga ttc cac tgc cac    3095
Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His
                900                 905                 910

ttt tca cca cgt gac tgg cag cga ctc atc aac aac aat tgg gga ttc    3143
Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe
915                 920                 925                 930

cgg ccc aag aga ctc aac ttc aaa ctc ttc aac atc caa gtc aag gag    3191
Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val Lys Glu
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gtc acg acg aat gat ggc gtc aca acc atc gct aat aac ctt acc agc    3239
Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn Leu Thr Ser
                950                 955                 960

acg gtt caa gtc ttc tcg gac tcg gag tac cag ctt ccg tac gtc ctc    3287
Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu
                965                 970                 975

ggc tct gcg cac cag ggc tgc ctc cct ccg ttc ccg gcg gac gtg ttc    3335
Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe
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995                  1000                  1005

gcc gtg gga cgt tca tcc   ttt tac tgc ctg gaa   tat ttc cct tct        3425
Ala Val Gly Arg Ser Ser   Phe Tyr Cys Leu Glu   Tyr Phe Pro Ser
1010                1015                  1020

cag atg ctg aga acg ggc   aac aac ttt acc ttc   agc tac acc ttt        3470
Gln Met Leu Arg Thr Gly   Asn Asn Phe Thr Phe   Ser Tyr Thr Phe
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gag gaa gtg cct ttc cac   agc agc tac gcg cac   agc cag agc ctg        3515
Glu Glu Val Pro Phe His   Ser Ser Tyr Ala His   Ser Gln Ser Leu
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gac cgg ctg atg aat cct   ctc atc gac caa tac   ctg tat tac ctg        3560
Asp Arg Leu Met Asn Pro   Leu Ile Asp Gln Tyr   Leu Tyr Tyr Leu
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aac aga act caa aat cag   tcc gga agt gcc caa   aac aag gac ttg        3605
Asn Arg Thr Gln Asn Gln   Ser Gly Ser Ala Gln   Asn Lys Asp Leu
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ctg ttt agc cgt ggg tct   cca gct ggc atg tct   gtt cag ccc aaa        3650
Leu Phe Ser Arg Gly Ser   Pro Ala Gly Met Ser   Val Gln Pro Lys
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aac tgg cta cct gga ccc   tgt tat cgg cag cag   cgc gtt tct aaa        3695
Asn Trp Leu Pro Gly Pro   Cys Tyr Arg Gln Gln   Arg Val Ser Lys
1100                1105                  1110

aca aaa aca gac aac aac   aac agc aat ttt acc   tgg act ggt gct        3740
Thr Lys Thr Asp Asn Asn   Asn Ser Asn Phe Thr   Trp Thr Gly Ala
1115                1120                  1125

tca aaa tat aac ctc aat   ggg cgt gaa tcc atc   atc aac cct ggc        3785
Ser Lys Tyr Asn Leu Asn   Gly Arg Glu Ser Ile   Ile Asn Pro Gly
1130                1135                  1140

act gct atg gcc tca cac   aaa gac gac gaa gac   aag ttc ttt ccc        3830
Thr Ala Met Ala Ser His   Lys Asp Asp Glu Asp   Lys Phe Phe Pro
1145                1150                  1155

atg agc ggt gtc atg att   ttt gga aaa gag agc   gcc gga gct tca        3875
Met Ser Gly Val Met Ile   Phe Gly Lys Glu Ser   Ala Gly Ala Ser
1160                1165                  1170

aac act gca ttg gac aat   gtc atg att aca gac   gaa gag gaa att        3920
Asn Thr Ala Leu Asp Asn   Val Met Ile Thr Asp   Glu Glu Glu Ile
1175                1180                  1185

aaa gcc act aac cct gtg   gcc acc gaa aga ttt   ggg acc gtg gca        3965
Lys Ala Thr Asn Pro Val   Ala Thr Glu Arg Phe   Gly Thr Val Ala
1190                1195                  1200

gtc aat ttc cag agc agc   agc aca gac cct gcg   acc gga gat gtg        4010
Val Asn Phe Gln Ser Ser   Ser Thr Asp Pro Ala   Thr Gly Asp Val
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cat  gct atg gga gca tta  cct ggc atg gtg tgg  caa gat aga gac       4055
His  Ala Met Gly Ala Leu  Pro Gly Met Val Trp  Gln Asp Arg Asp
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gtg  tac ctg cag ggt ccc  att tgg gcc aaa att  cct cac aca gat       4100
Val  Tyr Leu Gln Gly Pro  Ile Trp Ala Lys Ile  Pro His Thr Asp
1235                1240                   1245

gga  cac ttt cac ccg tct  cct ctt atg ggc ggc  ttt gga ctc aag       4145
Gly  His Phe His Pro Ser  Pro Leu Met Gly Gly  Phe Gly Leu Lys
1250                1255                   1260

aac  ccg cct cct cag atc  ctc atc aaa aac acg  cct gtt cct gcg       4190
Asn  Pro Pro Pro Gln Ile  Leu Ile Lys Asn Thr  Pro Val Pro Ala
1265                1270                   1275

aat  cct ccg gcg gag ttt  tca gct aca aag ttt  gct tca ttc atc       4235
Asn  Pro Pro Ala Glu Phe  Ser Ala Thr Lys Phe  Ala Ser Phe Ile
1280                1285                   1290

acc  caa tac tcc aca gga  caa gtg agt gtg gaa  att gaa tgg gag       4280
Thr  Gln Tyr Ser Thr Gly  Gln Val Ser Val Glu  Ile Glu Trp Glu
1295                1300                   1305

ctg  cag aaa gaa aac agc  aag cgc tgg aat ccc  gaa gtg cag tac       4325
Leu  Gln Lys Glu Asn Ser  Lys Arg Trp Asn Pro  Glu Val Gln Tyr
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aca  tcc aat tat gca aaa  tct gcc aac gtt gat  ttt act gtg gac       4370
Thr  Ser Asn Tyr Ala Lys  Ser Ala Asn Val Asp  Phe Thr Val Asp
1325                1330                   1335

aac  aat gga ctt tat act  gag cct cgc ccc att  ggc acc cgt tac       4415
Asn  Asn Gly Leu Tyr Thr  Glu Pro Arg Pro Ile  Gly Thr Arg Tyr
1340                1345                   1350

ctt  acc cgt ccc ctg taattacgtg ttaatcaata aaccggttga ttcgtttcag    4470
Leu  Thr Arg Pro Leu
1355

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taactgcttg gttgcgcttc gcgataaaag acttacgtca tcgggttacc cctagtgatg    4590

gagttgccca ctccctctct gcgcgctcgc tcgctcggtg gggcctgcgg accaaaggtc    4650

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Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
          35   40   45

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
    50   55   60

Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65   70   75   80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
              85   90   95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
              100   105   110

Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
        115   120   125

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
    130   135   140

Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145   150   155   160

Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
              165   170   175

Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
              180   185   190

Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
          195   200   205

Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
    210   215   220

Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
225   230   235   240

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
              245   250   255

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
          260   265   270

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
          275   280   285

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
    290   295   300

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305   310   315   320

Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
              325   330   335

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
            340   345   350

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
            355   360   365

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
        370   375   380

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385   390   395   400

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
                405   410   415

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
            420   425   430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
        435   440   445

Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
    450   455   460

Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
465   470   475   480

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
                485   490   495

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
            500   505   510

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
        515   520   525

Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
    530   535   540

Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
545   550   555   560

Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
                565   570   575

Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
            580   585   590

Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
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Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
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Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145                 150                 155                 160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180                 185                 190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
        195                 200                 205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
        210                 215                 220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225                 230                 235                 240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245                 250                 255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
            260                 265                 270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
        275                 280                 285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290                 295                 300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
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Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
325 330 335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
340 345 350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
355 360 365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
370 375 380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385 390 395 400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
405 410 415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
420 425 430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
435 440 445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
450 455 460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465 470 475 480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
485 490 495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
500 505 510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
515 520 525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
530 535 540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545 550 555 560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
565 570 575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
580 585 590

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
595 600 605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
610 615 620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                    645   650   655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
                    660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
              675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
        690   695   700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705   710   715   720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                    725   730   735

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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1   5   10   15

gag cac ctg ccg ggc att tct gac tcg ttt gtg agc tgg gtg gcc gag   96
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu
                20   25   30

aag gaa tgg gag ctg ccc ccg gat tct gac atg gat ctg aat ctg att   144
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
            35   40   45

gag cag gca ccc ctg acc gtg gcc gag aag ctg cag cgc gac ttc ctg   192
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
        50   55   60

gtc caa tgg cgc cgc gtg agt aag gcc ccg gag gcc ctc ttc ttt gtt   240
Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65   70   75   80

cag ttc gag aag ggc gag tcc tac ttc cac ctc cat att ctg gtg gag   288
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
                85   90   95

acc acg ggg gtc aaa tcc atg gtg ctg ggc cgc ttc ctg agt cag att   336
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
            100   105   110

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agg gac aag ctg gtg cag acc atc tac cgc ggg atc gag ccg acc ctg        384
Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
        115                 120                 125

ccc aac tgg ttc gcg gtg acc aag acg cgt aat ggc gcc gga ggg ggg        432
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
        130                 135                 140

aac aag gtg gtg gac gag tgc tac atc ccc aac tac ctc ctg ccc aag        480
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145                 150                 155                 160

act cag ccc gag ctg cag tgg gcg tgg act aac atg gag gag tat ata        528
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
                165                 170                 175

agc gcc tgt ttg aac ctg gcc gag cgc aaa cgg ctc gtg gcg cag cac        576
Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
            180                 185                 190

ctg acc cac gtc agc cag acc cag gag cag aac aag gag aat ctg aac        624
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
            195                 200                 205

ccc aat tct gac gcg cct gtc atc cgg tca aaa acc tcc gcg cgc tac        672
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
        210                 215                 220

atg gag ctg gtc ggg tgg ctg gtg gac cgg ggc atc acc tcc gag aag        720
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
225                 230                 235                 240

cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct        768
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
                245                 250                 255

tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag        816
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
                260                 265                 270

atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct        864
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
        275                 280                 285

ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg        912
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
        290                 295                 300

aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc        960
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305                 310                 315                 320

cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc      1008
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
                325                 330                 335

acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc      1056
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
        340                 345                 350
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ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat          1104
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
        355             360             365

tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc          1152
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
370             375             380

aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc          1200
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385             390             395             400

gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg          1248
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
            405             410             415

atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc          1296
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
            420             425             430

acc acc ttc gag cac cag cag ccg ttg cag gac cgg atg ttc aaa ttt          1344
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
        435             440             445

gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag          1392
Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
        450             455             460

gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg          1440
Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
465             470             475             480

gcg cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc          1488
Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
            485             490             495

ccc gat gac gcg gat aaa agc gag ccc aag cgg gcc tgc ccc tca gtc          1536
Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
            500             505             510

gcg gat cca tcg acg tca gac gcg gaa gga gct ccg gtg gac ttt gcc          1584
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
        515             520             525

gac agg tac caa aac aaa tgt tct cgt cac gcg ggc atg ctt cag atg          1632
Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
        530             535             540

ctg ttt ccc tgc aag aca tgc gag aga atg aat cag aat ttc aac att          1680
Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
545             550             555             560

tgc ttc acg cac ggg acg aga gac tgt tca gag tgc ttc ccc ggc gtg          1728
Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
                565             570             575

tca gaa tct caa ccg gtc gtc aga aag agg acg tat cgg aaa ctc tgt          1776
Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
            580             585             590
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gcc att cat cat ctg ctg ggg cgg gct ccc gag att gct tgc tcg gcc      1824
Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
        595               600               605


tgc gat ctg gtc aac gtg gac ctg gat gac tgt gtt tct gag caa taa     1872
Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
        610               615               620



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<213>  AAV-1

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Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1               5               10              15

Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu
            20              25              30

Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
        35              40              45

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
    50              55              60

Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65              70              75              80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
            85              90              95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
            100             105             110

Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
        115             120             125

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
    130             135             140

Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145             150             155             160

Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
            165             170             175

Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
            180             185             190

Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
        195             200             205

Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
    210             215             220

Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
225             230             235             240
```

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
            245   250   255

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
            260   265   270

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
        275   280   285

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
        290   295   300

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305   310   315   320

Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
            325   330   335

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
            340   345   350

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
            355   360   365

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
        370   375   380

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385   390   395   400

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
            405   410   415

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
            420   425   430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
        435   440   445

Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
    450   455   460

Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
465   470   475   480

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
            485   490   495

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
        500   505   510

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
        515   520   525

Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
        530   535   540

Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
        545   550   555   560

Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
                  565   570   575

Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
            580   585   590

Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
            595   600   605

Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
    610   615   620

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<212> DNA
<213> AAV-1

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<222> (1)..(1638)
<223>

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atg ccg ggc ttc tac gag atc gtg atc aag gtg ccg agc gac ctg gac   48
Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1   5   10   15

gag cac ctg ccg ggc att tct gac tcg ttt gtg agc tgg gtg gcc gag   96
Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu
                20   25   30

aag gaa tgg gag ctg ccc ccg gat tct gac atg gat ctg aat ctg att   144
Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
            35   40   45

gag cag gca ccc ctg acc gtg gcc gag aag ctg cag cgc gac ttc ctg   192
Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
        50   55   60

gtc caa tgg cgc cgc gtg agt aag gcc ccg gag gcc ctc ttc ttt gtt   240
Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65   70   75   80

cag ttc gag aag ggc gag tcc tac ttc cac ctc cat att ctg gtg gag   288
Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
                85   90   95

acc acg ggg gtc aaa tcc atg gtg ctg ggc cgc ttc ctg agt cag att   336
Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
                100   105   110

agg gac aag ctg gtg cag acc atc tac cgc ggg atc gag ccg acc ctg   384
Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
            115   120   125

ccc aac tgg ttc gcg gtg acc aag acg cgt aat ggc gcc gga ggg ggg   432
Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
            130   135   140

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aac aag gtg gtg gac gag tgc tac atc ccc aac tac ctc ctg ccc aag        480
Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145             150             155             160

act cag ccc gag ctg cag tgg gcg tgg act aac atg gag gag tat ata        528
Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
                165             170             175

agc gcc tgt ttg aac ctg gcc gag cgc aaa cgg ctc gtg gcg cag cac        576
Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
                180             185             190

ctg acc cac gtc agc cag acc cag gag cag aac aag gag aat ctg aac        624
Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
                195             200             205

ccc aat tct gac gcg cct gtc atc cgg tca aaa acc tcc gcg cgc tac        672
Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
210             215             220

atg gag ctg gtc ggg tgg ctg gtg gac cgg ggc atc acc tcc gag aag        720
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
225             230             235             240

cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct        768
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
                245             250             255

tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag        816
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
                260             265             270

atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct        864
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
                275             280             285

ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg        912
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
                290             295             300

aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc        960
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305             310             315             320

cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc       1008
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
                325             330             335

acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc       1056
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
                340             345             350

ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat       1104
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
                355             360             365

tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc       1152
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
370             375             380
```

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aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc        1200
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385                 390                 395                 400

gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg        1248
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
                405                 410                 415

atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc        1296
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
            420                 425                 430

acc acc ttc gag cac cag cag ccg ttg cag gac cgg atg ttc aaa ttt        1344
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
            435                 440                 445

gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag        1392
Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
    450                 455                 460

gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg        1440
Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
465                 470                 475                 480

gcg cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc        1488
Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
                485                 490                 495

ccc gat gac gcg gat aaa agc gag ccc aag cgg gcc tgc ccc tca gtc        1536
Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
                500                 505                 510

gcg gat cca tcg acg tca gac gcg gaa gga gct ccg gtg gac ttt gcc        1584
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
            515                 520                 525

gac agg tat ggc tgc cga tgg tta tct tcc aga ttg gct cga gga caa        1632
Asp Arg Tyr Gly Cys Arg Trp Leu Ser Ser Arg Leu Ala Arg Gly Gln
530                 535                 540

                                                                        1641
cct ctc tga
Pro Leu
545


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<211> 546
<212> PRT
<213> AAV-1

<400> 7
Met Pro Gly Phe Tyr Glu Ile Val Ile Lys Val Pro Ser Asp Leu Asp
1               5                   10                  15

Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Ser Trp Val Ala Glu
            20                  25                  30

Lys Glu Trp Glu Leu Pro Pro Asp Ser Asp Met Asp Leu Asn Leu Ile
        35                  40                  45
```

Glu Gln Ala Pro Leu Thr Val Ala Glu Lys Leu Gln Arg Asp Phe Leu
    50   55   60

Val Gln Trp Arg Arg Val Ser Lys Ala Pro Glu Ala Leu Phe Phe Val
65   70   75   80

Gln Phe Glu Lys Gly Glu Ser Tyr Phe His Leu His Ile Leu Val Glu
                85   90   95

Thr Thr Gly Val Lys Ser Met Val Leu Gly Arg Phe Leu Ser Gln Ile
            100   105   110

Arg Asp Lys Leu Val Gln Thr Ile Tyr Arg Gly Ile Glu Pro Thr Leu
        115   120   125

Pro Asn Trp Phe Ala Val Thr Lys Thr Arg Asn Gly Ala Gly Gly Gly
    130   135   140

Asn Lys Val Val Asp Glu Cys Tyr Ile Pro Asn Tyr Leu Leu Pro Lys
145   150   155   160

Thr Gln Pro Glu Leu Gln Trp Ala Trp Thr Asn Met Glu Glu Tyr Ile
            165   170   175

Ser Ala Cys Leu Asn Leu Ala Glu Arg Lys Arg Leu Val Ala Gln His
        180   185   190

Leu Thr His Val Ser Gln Thr Gln Glu Gln Asn Lys Glu Asn Leu Asn
    195   200   205

Pro Asn Ser Asp Ala Pro Val Ile Arg Ser Lys Thr Ser Ala Arg Tyr
    210   215   220

Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
225   230   235   240

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
            245   250   255

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
            260   265   270

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
    275   280   285

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
    290   295   300

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
305   310   315   320

Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
            325   330   335

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
            340   345   350

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
        355   360   365

```
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
    370                 375                 380

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
385                 390                 395                 400

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
                405                 410                 415

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
                420                 425                 430

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
            435                 440                 445

Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
    450                 455                 460

Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
465                 470                 475                 480

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
                485                 490                 495

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
            500                 505                 510

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
            515                 520                 525

Asp Arg Tyr Gly Cys Arg Trp Leu Ser Ser Arg Leu Ala Arg Gly Gln
    530                 535                 540

Pro Leu
545


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<212>  DNA
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<222>  (1)..(1197)
<223>

<400>  8
atg gag ctg gtc ggg tgg ctg gtg gac cgg ggc atc acc tcc gag aag      48
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
1               5                   10                  15

cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct      96
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
            20                  25                  30

tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag     144
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
        35                  40                  45
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atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct          192
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
    50              55                  60

ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg          240
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
65              70                  75                      80

aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc          288
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
                    85                  90                  95

cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc          336
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
                100                 105                 110

acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc          384
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
            115                 120                 125

ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat          432
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
        130                 135                 140

tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc          480
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145                 150                 155                 160

aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc          528
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
                165                 170                 175

gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg          576
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
            180                 185                 190

atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc          624
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
        195                 200                 205

acc acc ttc gag cac cag cag ccg ttg cag gac cgg atg ttc aaa ttt          672
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
    210                 215                 220

gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag          720
Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
225                 230                 235                 240

gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg          768
Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
                245                 250                 255

gcg cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc          816
Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
                260                 265                 270

ccc gat gac gcg gat aaa agc gag ccc aag cgg gcc tgc ccc tca gtc          864
Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
            275                 280                 285
```

```
gcg gat cca tcg acg tca gac gcg gaa gga gct ccg gtg gac ttt gcc        912
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
    290             295                 300

gac agg tac caa aac aaa tgt tct cgt cac gcg ggc atg ctt cag atg        960
Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
305             310                 315                 320

ctg ttt ccc tgc aag aca tgc gag aga atg aat cag aat ttc aac att       1008
Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
                325                 330                 335

tgc ttc acg cac ggg acg aga gac tgt tca gag tgc ttc ccc ggc gtg       1056
Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
            340                 345                 350

tca gaa tct caa ccg gtc gtc aga aag agg acg tat cgg aaa ctc tgt       1104
Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
            355                 360                 365

gcc att cat cat ctg ctg ggg cgg gct ccc gag att gct tgc tcg gcc       1152
Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
370                 375                 380

tgc gat ctg gtc aac gtg gac ctg gat gac tgt gtt tct gag caa taa      1200
Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
385                 390                 395


<210>   9
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<212>   PRT
<213>   AAV-1

<400>   9
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
1               5                   10                  15

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
            20                  25                  30

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
        35                  40                  45

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
    50                  55                  60

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
65                  70                  75                  80

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
                85                  90                  95

Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
            100                 105                 110

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
        115                 120                 125

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
```

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145   150   155   160

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
                    165   170   175

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
                180   185   190

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
                195   200   205

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
210   215   220

Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
225   230   235   240

Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
                245   250   255

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
                260   265   270

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
                275   280   285

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
                290   295   300

Asp Arg Tyr Gln Asn Lys Cys Ser Arg His Ala Gly Met Leu Gln Met
305   310   315   320

Leu Phe Pro Cys Lys Thr Cys Glu Arg Met Asn Gln Asn Phe Asn Ile
                325   330   335

Cys Phe Thr His Gly Thr Arg Asp Cys Ser Glu Cys Phe Pro Gly Val
                340   345   350

Ser Glu Ser Gln Pro Val Val Arg Lys Arg Thr Tyr Arg Lys Leu Cys
                355   360   365

Ala Ile His His Leu Leu Gly Arg Ala Pro Glu Ile Ala Cys Ser Ala
370   375   380

Cys Asp Leu Val Asn Val Asp Leu Asp Asp Cys Val Ser Glu Gln
385   390   395

<210>   10
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<212>   DNA
<213>   AAV-1

<220>
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<222>   (1)..(966)
<223>

<220>
<221> misc_feature
<222> (943)..(944)
<223> minor splice site

<400> 10

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atg gag ctg gtc ggg tgg ctg gtg gac cgg ggc atc acc tcc gag aag      48
Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
1               5                  10                 15

cag tgg atc cag gag gac cag gcc tcg tac atc tcc ttc aac gcc gct      96
Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
            20                 25                 30

tcc aac tcg cgg tcc cag atc aag gcc gct ctg gac aat gcc ggc aag     144
Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
        35                 40                 45

atc atg gcg ctg acc aaa tcc gcg ccc gac tac ctg gta ggc ccc gct     192
Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
    50                 55                 60

ccg ccc gcg gac att aaa acc aac cgc atc tac cgc atc ctg gag ctg     240
Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
65                 70                 75                 80

aac ggc tac gaa cct gcc tac gcc ggc tcc gtc ttt ctc ggc tgg gcc     288
Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
                85                 90                 95

cag aaa agg ttc ggg aag cgc aac acc atc tgg ctg ttt ggg ccg gcc     336
Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
            100                105                110

acc acg ggc aag acc aac atc gcg gaa gcc atc gcc cac gcc gtg ccc     384
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
            115                120                125

ttc tac ggc tgc gtc aac tgg acc aat gag aac ttt ccc ttc aat gat     432
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
    130                135                140

tgc gtc gac aag atg gtg atc tgg tgg gag gag ggc aag atg acg gcc     480
Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145                150                155                160

aag gtc gtg gag tcc gcc aag gcc att ctc ggc ggc agc aag gtg cgc     528
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
                165                170                175

gtg gac caa aag tgc aag tcg tcc gcc cag atc gac ccc acc ccc gtg     576
Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
            180                185                190

atc gtc acc tcc aac acc aac atg tgc gcc gtg att gac ggg aac agc     624
Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
            195                200                205

acc acc ttc gag cac cag cag ccg ttg cag gac cgg atg ttc aaa ttt     672
```

```
Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
    210               215               220

gaa ctc acc cgc cgt ctg gag cat gac ttt ggc aag gtg aca aag cag    720
Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
225               230               235               240

gaa gtc aaa gag ttc ttc cgc tgg gcg cag gat cac gtg acc gag gtg    768
Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
              245               250               255

gcg cat gag ttc tac gtc aga aag ggt gga gcc aac aaa aga ccc gcc    816
Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
              260               265               270

ccc gat gac gcg gat aaa agc gag ccc aag cgg gcc tgc ccc tca gtc    864
Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
              275               280               285

gcg gat cca tcg acg tca gac gcg gaa gga gct ccg gtg gac ttt gcc    912
Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
    290               295               300

gac agg tat ggc tgc cga tgg tta tct tcc aga ttg gct cga gga caa    960
Asp Arg Tyr Gly Cys Arg Trp Leu Ser Ser Arg Leu Ala Arg Gly Gln
305               310               315               320

                                                                   969

cct ctc tga
Pro Leu


<210>  11
<211>  322
<212>  PRT
<213>  AAV-1

<220>
<221>  misc_feature
<222>  (943)..(944)
<223>  minor splice site

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Met Glu Leu Val Gly Trp Leu Val Asp Arg Gly Ile Thr Ser Glu Lys
1           5                   10                  15

Gln Trp Ile Gln Glu Asp Gln Ala Ser Tyr Ile Ser Phe Asn Ala Ala
              20              25              30

Ser Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Gly Lys
    35              40              45

Ile Met Ala Leu Thr Lys Ser Ala Pro Asp Tyr Leu Val Gly Pro Ala
    50              55              60

Pro Pro Ala Asp Ile Lys Thr Asn Arg Ile Tyr Arg Ile Leu Glu Leu
65              70              75              80

Asn Gly Tyr Glu Pro Ala Tyr Ala Gly Ser Val Phe Leu Gly Trp Ala
              85              90              95
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Gln Lys Arg Phe Gly Lys Arg Asn Thr Ile Trp Leu Phe Gly Pro Ala
        100   105   110

Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Ala Val Pro
        115   120   125

Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
    130   135   140

Cys Val Asp Lys Met Val Ile Trp Trp Glu Glu Gly Lys Met Thr Ala
145   150   155   160

Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
                165   170   175

Val Asp Gln Lys Cys Lys Ser Ser Ala Gln Ile Asp Pro Thr Pro Val
        180   185   190

Ile Val Thr Ser Asn Thr Asn Met Cys Ala Val Ile Asp Gly Asn Ser
        195   200   205

Thr Thr Phe Glu His Gln Gln Pro Leu Gln Asp Arg Met Phe Lys Phe
        210   215   220

Glu Leu Thr Arg Arg Leu Glu His Asp Phe Gly Lys Val Thr Lys Gln
225   230   235   240

Glu Val Lys Glu Phe Phe Arg Trp Ala Gln Asp His Val Thr Glu Val
                245   250   255

Ala His Glu Phe Tyr Val Arg Lys Gly Gly Ala Asn Lys Arg Pro Ala
            260   265   270

Pro Asp Asp Ala Asp Lys Ser Glu Pro Lys Arg Ala Cys Pro Ser Val
        275   280   285

Ala Asp Pro Ser Thr Ser Asp Ala Glu Gly Ala Pro Val Asp Phe Ala
    290   295   300

Asp Arg Tyr Gly Cys Arg Trp Leu Ser Ser Arg Leu Ala Arg Gly Gln
305   310   315   320

Pro Leu

<210> 12
<211> 2211
<212> DNA
<213> AAV-1

<220>
<221> CDS
<222> (1)..(2208)
<223>

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atg gct gcc gat ggt tat ctt cca gat tgg ctc gag gac aac ctc tct
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser

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gag ggc att cgc gag tgg tgg gac ttg aaa cct gga gcc ccg aag ccc        96
Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
         20                      25                  30

aaa gcc aac cag caa aag cag gac gac ggc cgg ggt ctg gtg ctt cct       144
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
         35                      40                  45

ggc tac aag tac ctc gga ccc ttc aac gga ctc gac aag ggg gag ccc       192
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
         50                  55                  60

gtc aac gcg gcg gac gca gcg gcc ctc gag cac gac aag gcc tac gac       240
Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                       70                  75                  80

cag cag ctc aaa gcg ggt gac aat ccg tac ctg cgg tat aac cac gcc       288
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                     85                  90                  95

gac gcc gag ttt cag gag cgt ctg caa gaa gat acg tct ttt ggg ggc       336
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
             100                     105                 110

aac ctc ggg cga gca gtc ttc cag gcc aag aag cgg gtt ctc gaa cct       384
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
             115                     120                 125

ctc ggt ctg gtt gag gaa ggc gct aag acg gct cct gga aag aaa cgt       432
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
         130                     135                 140

ccg gta gag cag tcg cca caa gag cca gac tcc tcc tcg ggc atc ggc       480
Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145                      150                 155                 160

aag aca ggc cag cag ccc gct aaa aag aga ctc aat ttt ggt cag act       528
Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                     165                 170                 175

ggc gac tca gag tca gtc ccc gat cca caa cct ctc gga gaa cct cca       576
Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
             180                     185                 190

gca acc ccc gct gct gtg gga cct act aca atg gct tca ggc ggt ggc       624
Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
             195                     200                 205

gca cca atg gca gac aat aac gaa ggc gcc gac gga gtg ggt aat gcc       672
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
         210                     215                 220

tca gga aat tgg cat tgc gat tcc aca tgg ctg ggc gac aga gtc atc       720
Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225                      230                 235                 240

acc acc agc acc cgc acc tgg gcc ttg ccc acc tac aat aac cac ctc       768
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
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```
tac aag caa atc tcc agt gct tca acg ggg gcc agc aac gac aac cac        816
Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
                260                265                270

tac ttc ggc tac agc acc ccc tgg ggg tat ttt gat ttc aac aga ttc        864
Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
        275                280                285

cac tgc cac ttt tca cca cgt gac tgg cag cga ctc atc aac aac aat        912
His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290                295                300

tgg gga ttc cgg ccc aag aga ctc aac ttc aaa ctc ttc aac atc caa        960
Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305                310                315                320

gtc aag gag gtc acg acg aat gat ggc gtc aca acc atc gct aat aac       1008
Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
                325                330                335

ctt acc agc acg gtt caa gtc ttc tcg gac tcg gag tac cag ctt ccg       1056
Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
                340                345                350

tac gtc ctc ggc tct gcg cac cag ggc tgc ctc cct ccg ttc ccg gcg       1104
Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
            355                360                365

gac gtg ttc atg att ccg caa tac ggc tac ctg acg ctc aac aat ggc       1152
Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370                375                380

agc caa gcc gtg gga cgt tca tcc ttt tac tgc ctg gaa tat ttc cct       1200
Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385                390                395                400

tct cag atg ctg aga acg ggc aac aac ttt acc ttc agc tac acc ttt       1248
Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
                405                410                415

gag gaa gtg cct ttc cac agc agc tac gcg cac agc cag agc ctg gac       1296
Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
            420                425                430

cgg ctg atg aat cct ctc atc gac caa tac ctg tat tac ctg aac aga       1344
Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
        435                440                445

act caa aat cag tcc gga agt gcc caa aac aag gac ttg ctg ttt agc       1392
Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
    450                455                460

cgt ggg tct cca gct ggc atg tct gtt cag ccc aaa aac tgg cta cct       1440
Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465                470                475                480

gga ccc tgt tat cgg cag cag cgc gtt tct aaa aca aaa aca gac aac       1488
Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
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aac aac agc aat ttt acc tgg act ggt gct tca aaa tat aac ctc aat        1536
Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
            500                     505                 510

ggg cgt gaa tcc atc atc aac cct ggc act gct atg gcc tca cac aaa        1584
Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
            515                     520                 525

gac gac gaa gac aag ttc ttt ccc atg agc ggt gtc atg att ttt gga        1632
Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530                     535                 540

aaa gag agc gcc gga gct tca aac act gca ttg gac aat gtc atg att        1680
Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545                 550                 555                 560

aca gac gaa gag gaa att aaa gcc act aac cct gtg gcc acc gaa aga        1728
Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
                565                 570                 575

ttt ggg acc gtg gca gtc aat ttc cag agc agc agc aca gac cct gcg        1776
Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
                580                 585                 590

acc gga gat gtg cat gct atg gga gca tta cct ggc atg gtg tgg caa        1824
Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
            595                 600                 605

gat aga gac gtg tac ctg cag ggt ccc att tgg gcc aaa att cct cac        1872
Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610                 615                 620

aca gat gga cac ttt cac ccg tct cct ctt atg ggc ggc ttt gga ctc       1920
Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625                 630                 635                 640

aag aac ccg cct cct cag atc ctc atc aaa aac acg cct gtt cct gcg       1968
Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645                 650                 655

aat cct ccg gcg gag ttt tca gct aca aag ttt gct tca ttc atc acc       2016
Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
            660                 665                 670

caa tac tcc aca gga caa gtg agt gtg gaa att gaa tgg gag ctg cag       2064
Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
            675                 680                 685

aaa gaa aac agc aag cgc tgg aat ccc gaa gtg cag tac aca tcc aat       2112
Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
    690                 695                 700

tat gca aaa tct gcc aac gtt gat ttt act gtg gac aac aat gga ctt       2160
Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705                 710                 715                 720

tat act gag cct cgc ccc att ggc acc cgt tac ctt acc cgt ccc ctg       2208
Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
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taa

<210> 13
<211> 736
<212> PRT
<213> AAV-1

<400> 13
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
    275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
         325   330   335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
         340   345   350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
         355   360   365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370   375   380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385   390   395   400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
         405   410   415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
         420   425   430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
         435   440   445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
         450   455   460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465   470   475   480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
         485   490   495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
         500   505   510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
         515   520   525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530   535   540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545   550   555   560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
         565   570   575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
        595   600   605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
        610   615   620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625   630   635   640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645   650   655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
            660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
        690   695   700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705   710   715   720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
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Thr Ala Pro Gly Lys Lys Arg Pro Val Glu Gln Ser Pro Gln Glu Pro
1   5   10   15

gac tcc tcc tcg ggc atc ggc aag aca ggc cag cag ccc gct aaa aag   96
Asp Ser Ser Ser Gly Ile Gly Lys Thr Gly Gln Gln Pro Ala Lys Lys
                20   25   30

aga ctc aat ttt ggt cag act ggc gac tca gag tca gtc ccc gat cca   144
Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser Val Pro Asp Pro
            35   40   45

caa cct ctc gga gaa cct cca gca acc ccc gct gct gtg gga cct act   192
Gln Pro Leu Gly Glu Pro Pro Ala Thr Pro Ala Ala Val Gly Pro Thr
        50   55   60

aca atg gct tca ggc ggt ggc gca cca atg gca gac aat aac gaa ggc   240
Thr Met Ala Ser Gly Gly Gly Ala Pro Met Ala Asp Asn Asn Glu Gly
65   70   75   80

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gcc gac gga gtg ggt aat gcc tca gga aat tgg cat tgc gat tcc aca        288
Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser Thr
                85                      90                  95

tgg ctg ggc gac aga gtc atc acc acc agc acc cgc acc tgg gcc ttg        336
Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu
            100                 105                 110

ccc acc tac aat aac cac ctc tac aag caa atc tcc agt gct tca acg        384
Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr
        115                 120                 125

ggg gcc agc aac gac aac cac tac ttc ggc tac agc acc ccc tgg ggg        432
Gly Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly
        130                 135                 140

tat ttt gat ttc aac aga ttc cac tgc cac ttt tca cca cgt gac tgg        480
Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp
145                 150                 155                 160

cag cga ctc atc aac aac aat tgg gga ttc cgg ccc aag aga ctc aac        528
Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn
                165                 170                 175

ttc aaa ctc ttc aac atc caa gtc aag gag gtc acg acg aat gat ggc        576
Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly
                180                 185                 190

gtc aca acc atc gct aat aac ctt acc agc acg gtt caa gtc ttc tcg        624
Val Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser
        195                 200                 205

gac tcg gag tac cag ctt ccg tac gtc ctc ggc tct gcg cac cag ggc        672
Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly
        210                 215                 220

tgc ctc cct ccg ttc ccg gcg gac gtg ttc atg att ccg caa tac ggc        720
Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly
225                 230                 235                 240

tac ctg acg ctc aac aat ggc agc caa gcc gtg gga cgt tca tcc ttt        768
Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe
                245                 250                 255

tac tgc ctg gaa tat ttc cct tct cag atg ctg aga acg ggc aac aac        816
Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn
                260                 265                 270

ttt acc ttc agc tac acc ttt gag gaa gtg cct ttc cac agc agc tac        864
Phe Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr
        275                 280                 285

gcg cac agc cag agc ctg gac cgg ctg atg aat cct ctc atc gac caa        912
Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
        290                 295                 300

tac ctg tat tac ctg aac aga act caa aat cag tcc gga agt gcc caa        960
Tyr Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln
305                 310                 315                 320
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aac aag gac ttg ctg ttt agc cgt ggg tct cca gct ggc atg tct gtt     1008
Asn Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val
                325                 330                 335

cag ccc aaa aac tgg cta cct gga ccc tgt tat cgg cag cag cgc gtt     1056
Gln Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val
                340                 345                 350

tct aaa aca aaa aca gac aac aac aac agc aat ttt acc tgg act ggt     1104
Ser Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly
                355                 360                 365

gct tca aaa tat aac ctc aat ggg cgt gaa tcc atc atc aac cct ggc     1152
Ala Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly
                370                 375                 380

act gct atg gcc tca cac aaa gac gac gaa gac aag ttc ttt ccc atg     1200
Thr Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met
385                 390                 395                 400

agc ggt gtc atg att ttt gga aaa gag agc gcc gga gct tca aac act     1248
Ser Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr
                405                 410                 415

gca ttg gac aat gtc atg att aca gac gaa gag gaa att aaa gcc act     1296
Ala Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr
                420                 425                 430

aac cct gtg gcc acc gaa aga ttt ggg acc gtg gca gtc aat ttc cag     1344
Asn Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln
                435                 440                 445

agc agc agc aca gac cct gcg acc gga gat gtg cat gct atg gga gca     1392
Ser Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala
                450                 455                 460

tta cct ggc atg gtg tgg caa gat aga gac gtg tac ctg cag ggt ccc     1440
Leu Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro
465                 470                 475                 480

att tgg gcc aaa att cct cac aca gat gga cac ttt cac ccg tct cct     1488
Ile Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro
                485                 490                 495

ctt atg ggc ggc ttt gga ctc aag aac ccg cct cct cag atc ctc atc     1536
Leu Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile
                500                 505                 510

aaa aac acg cct gtt cct gcg aat cct ccg gcg gag ttt tca gct aca     1584
Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr
                515                 520                 525

aag ttt gct tca ttc atc acc caa tac tcc aca gga caa gtg agt gtg     1632
Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val
                530                 535                 540

gaa att gaa tgg gag ctg cag aaa gaa aac agc aag cgc tgg aat ccc     1680
Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro
545                 550                 555                 560
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gaa gtg cag tac aca tcc aat tat gca aaa tct gcc aac gtt gat ttt          1728
Glu Val Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe
                565                     570                 575

act gtg gac aac aat gga ctt tat act gag cct cgc ccc att ggc acc          1776
Thr Val Asp Asn Asn Gly Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr
                580                     585                 590
                                                                         1800
cgt tac ctt acc cgt ccc ctg taa
Arg Tyr Leu Thr Arg Pro Leu
            595


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1               5               10                  15

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            20                  25                  30

Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser Val Pro Asp Pro
        35                  40                  45

Gln Pro Leu Gly Glu Pro Pro Ala Thr Pro Ala Ala Val Gly Pro Thr
    50                  55                  60

Thr Met Ala Ser Gly Gly Gly Ala Pro Met Ala Asp Asn Asn Glu Gly
65                  70                  75                  80

Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser Thr
                85                  90                  95

Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu
            100                 105                 110

Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr
        115                 120                 125

Gly Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly
    130                 135                 140

Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp
145                 150                 155                 160

Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn
                165                 170                 175

Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly
            180                 185                 190

Val Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser
        195                 200                 205

Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly
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                210                  215                   220
Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly
225                 230                 235                 240

Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe
                245                 250                 255

Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn
                260                 265                 270

Phe Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr
                275                 280                 285

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
                290                 295                 300

Tyr Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln
305                 310                 315                 320

Asn Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val
                325                 330                 335

Gln Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val
                340                 345                 350

Ser Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly
                355                 360                 365

Ala Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly
370                 375                 380

Thr Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met
385                 390                 395                 400

Ser Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr
                405                 410                 415

Ala Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr
                420                 425                 430

Asn Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln
                435                 440                 445

Ser Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala
                450                 455                 460

Leu Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro
465                 470                 475                 480

Ile Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro
                485                 490                 495

Leu Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile
                500                 505                 510

Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr
                515                 520                 525

Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val
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tcg gag tac cag ctt ccg tac gtc ctc ggc tct gcg cac cag ggc tgc     480
Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys
145                 150                 155                 160

ctc cct ccg ttc ccg gcg gac gtg ttc atg att ccg caa tac ggc tac     528
Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr
                165                 170                 175

ctg acg ctc aac aat ggc agc caa gcc gtg gga cgt tca tcc ttt tac     576
Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr
                180                 185                 190

tgc ctg gaa tat ttc cct tct cag atg ctg aga acg ggc aac aac ttt     624
Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe
                195                 200                 205

acc ttc agc tac acc ttt gag gaa gtg cct ttc cac agc agc tac gcg     672
Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr Ala
210                 215                 220

cac agc cag agc ctg gac cgg ctg atg aat cct ctc atc gac caa tac     720
His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
225                 230                 235                 240

ctg tat tac ctg aac aga act caa aat cag tcc gga agt gcc caa aac     768
Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
                245                 250                 255

aag gac ttg ctg ttt agc cgt ggg tct cca gct ggc atg tct gtt cag     816
Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
                260                 265                 270

ccc aaa aac tgg cta cct gga ccc tgt tat cgg cag cag cgc gtt tct     864
Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
                275                 280                 285

aaa aca aaa aca gac aac aac aac agc aat ttt acc tgg act ggt gct     912
Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
                290                 295                 300

tca aaa tat aac ctc aat ggg cgt gaa tcc atc atc aac cct ggc act     960
Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
305                 310                 315                 320

gct atg gcc tca cac aaa gac gac gaa gac aag ttc ttt ccc atg agc    1008
Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser
                325                 330                 335

ggt gtc atg att ttt gga aaa gag agc gcc gga gct tca aac act gca    1056
Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
                340                 345                 350

ttg gac aat gtc atg att aca gac gaa gag gaa att aaa gcc act aac    1104
Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
                355                 360                 365

cct gtg gcc acc gaa aga ttt ggg acc gtg gca gtc aat ttc cag agc    1152
Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser
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                370              375                380
agc agc aca gac cct gcg acc gga gat gtg cat gct atg gga gca tta        1200
Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala Leu
385                 390                 395                 400

cct ggc atg gtg tgg caa gat aga gac gtg tac ctg cag ggt ccc att        1248
Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
                405                 410                 415

tgg gcc aaa att cct cac aca gat gga cac ttt cac ccg tct cct ctt        1296
Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu
                420                 425                 430

atg ggc ggc ttt gga ctc aag aac ccg cct cct cag atc ctc atc aaa        1344
Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys
                435                 440                 445

aac acg cct gtt cct gcg aat cct ccg gcg gag ttt tca gct aca aag        1392
Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys
        450                 455                 460

ttt gct tca ttc atc acc caa tac tcc aca gga caa gtg agt gtg gaa        1440
Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu
465                 470                 475                 480

att gaa tgg gag ctg cag aaa gaa aac agc aag cgc tgg aat ccc gaa        1488
Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu
                485                 490                 495

gtg cag tac aca tcc aat tat gca aaa tct gcc aac gtt gat ttt act        1536
Val Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr
                500                 505                 510

gtg gac aac aat gga ctt tat act gag cct cgc ccc att ggc acc cgt        1584
Val Asp Asn Asn Gly Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg
                515                 520                 525

                                                                        1605
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Tyr Leu Thr Arg Pro Leu
        530


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Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp
            20                  25                  30

Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro
        35                  40                  45

Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly
        50                  55                  60
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Ala Ser Asn Asp Asn His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr
65   70   75   80

Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln
                      85   90   95

Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe
                      100   105   110

Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val
              115   120   125

Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp
    130   135   140

Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys
145   150   155   160

Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr
              165   170   175

Leu Thr Leu Asn Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr
              180   185   190

Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe
    195   200   205

Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr Ala
    210   215   220

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
225   230   235   240

Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
              245   250   255

Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
              260   265   270

Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
    275   280   285

Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
    290   295   300

Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
305   310   315   320

Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser
              325   330   335

Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
              340   345   350

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
    355   360   365

Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser
    370   375   380

Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala Leu
385   390   395   400

Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
                405   410   415

Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu
            420   425   430

Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys
        435   440   445

Asn Thr Pro Val Pro Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys
    450   455   460

Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu
465   470   475   480

Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu
                485   490   495

Val Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr
            500   505   510

Val Asp Asn Asn Gly Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg
        515   520   525

Tyr Leu Thr Arg Pro Leu
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gccaactcca tcactagggg ttcctggagg ggtggagtcg tgacgtgaat tacgtcatag   180

ggttagggag gtcctgtatt agaggtcacg tgagtgtttt gcgacatttt gcgacaccat   240

gtggtcacgc tgggtattta agcccgagtg agcacgcagg gtctccattt tgaagcggga   300

ggtttgaacg cgcagccgcc atgccggggt tttacgagat tgtgattaag gtccccagcg   360

accttgacgg gcatctgccc ggcatttctg acagctttgt gaactgggtg gccgagaagg   420

aatgggagtt gccgccagat tctgacatgg atctgaatct gattgagcag gcacccctga   480

ccgtggccga gaagctgcag cgcgactttc tgacggaatg cgccgtgtg agtaaggccc   540

cggaggccct tttctttgtg caatttgaga agggagagag ctacttccac atgcacgtgc   600

tcgtggaaac caccggggtg aaatccatgg ttttgggacg tttcctgagt cagattcgcg   660

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aaaaactgat tcagagaatt taccgcggga tcgagccgac tttgccaaac tggttcgcgg    720

tcacaaagac cagaaatggc gccggaggcg ggaacaaggt ggtggatgag tgctacatcc    780

ccaattactt gctccccaaa acccagcctg agctccagtg ggcgtggact aatatggaac    840

agtatttaag cgcctgtttg aatctcacgg agcgtaaacg gttggtggcg cagcatctga    900

cgcacgtgtc gcagacgcag gagcagaaca aagagaatca gaatcccaat tctgatgcgc    960

cggtgatcag atcaaaaact tcagccaggt acatggagct ggtcgggtgg ctcgtggaca   1020

aggggattac ctcggagaag cagtggatcc aggaggacca ggcctcatac atctccttca   1080

atgcggcctc caactcgcgg tcccaaatca aggctgcctt ggacaatgcg ggaaagatta   1140

tgagcctgac taaaaccgcc cccgactacc tggtgggcca gcagcccgtg gaggacattt   1200

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ccgtctttct gggatgggcc acgaaaaagt tcggcaagag gaacaccatc tggctgtttg   1320

ggcctgcaac taccgggaag accaacatcg cggaggccat agcccacact gtgcccttct   1380

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